

User Manual

TypeEVB User Manual for 00000008

RevB

Confidential, Reference only, from my Murata
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Wednesday, March 20, 2019
Change may apply without notification.



This user manual describes how to test the module with TypeABZ EVB, the test commands format and how to upgrade test FW.
The test commands are based in FW version 00000008.

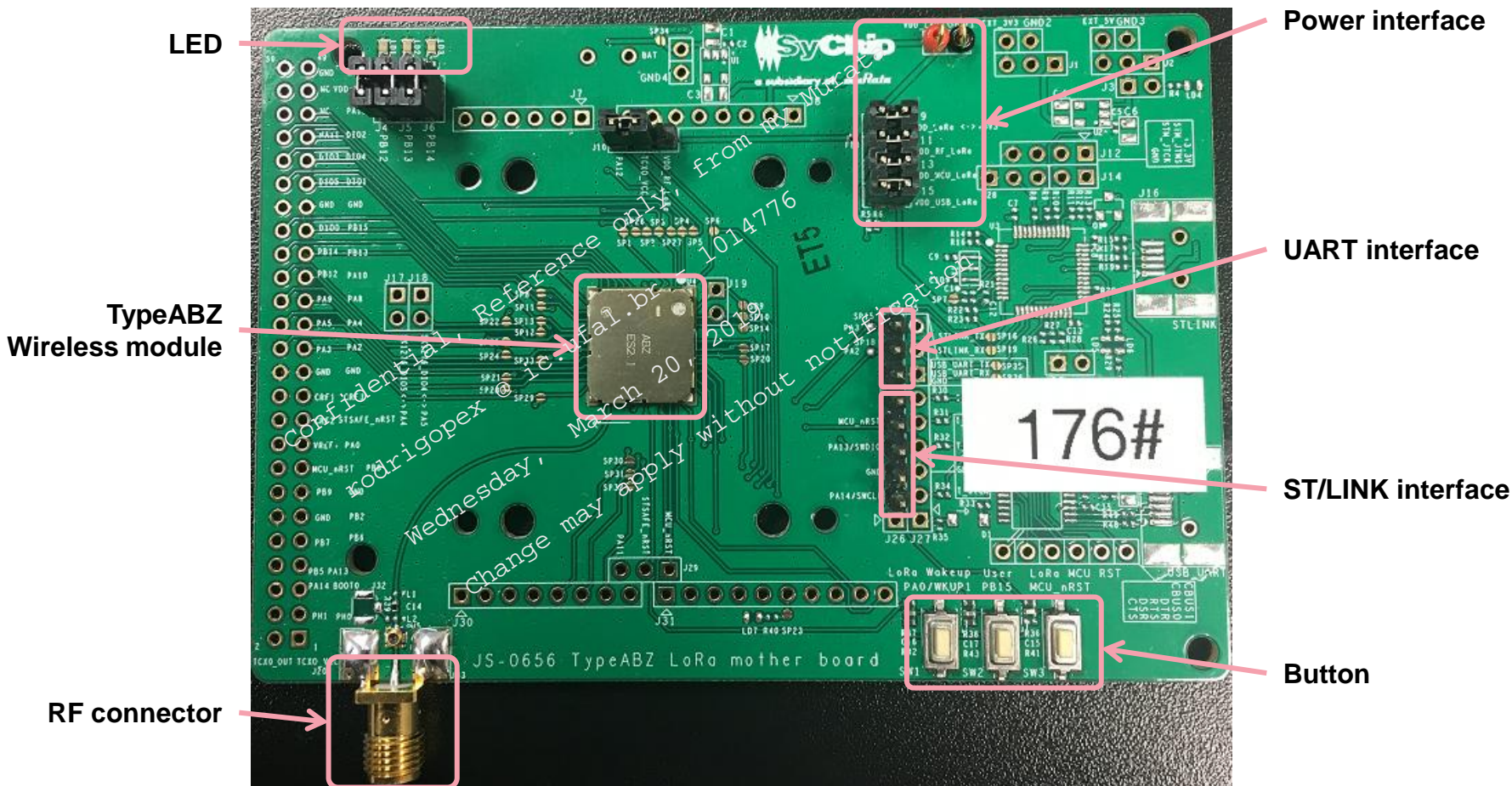
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- TypeABZ EVB Description
- Getting started with TypeABZ EVB
- Test command format
- FW upgrade with ST-LINK/V2

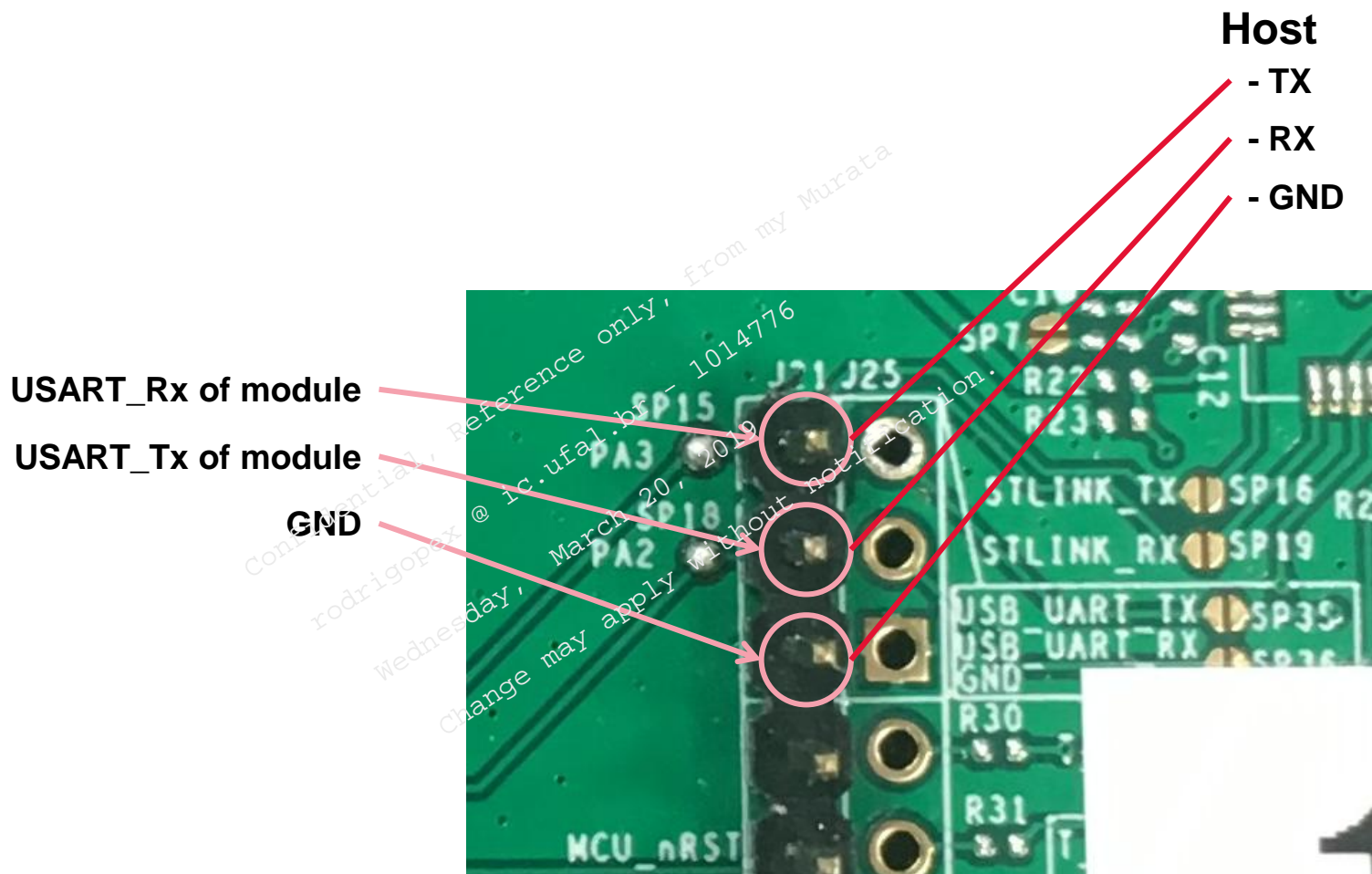
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TypeABZ EVB Description

Picture below shows the main parts of TypeABZ EVB.
Test FW is already programmed in the module.



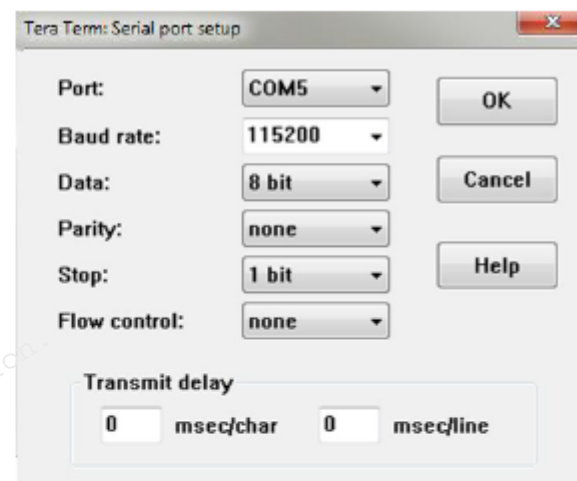
Pin connection diagram on UART interface



Getting started with TypeABZ EVB

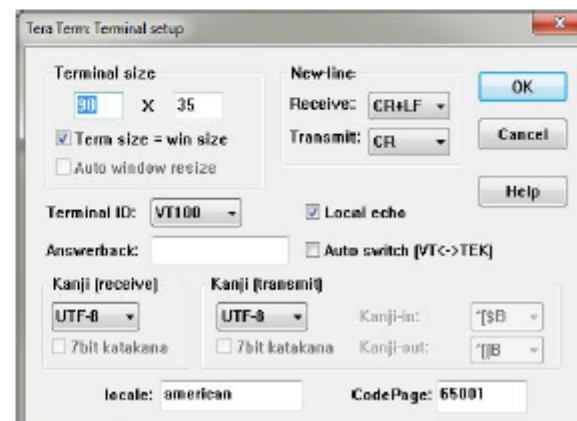
- Steps to get started

1. Connect power supply cable to power interface of EVB. (Typical supply voltage is 3.3V.)
2. Connect EVB to PC via UART interface J21.
*An external UART to USB device is needed.
3. Connect RF cable to J33 RF connector.
4. Power on EVB. If the Serial port tool is set properly, it will display a message "Module 1 Ready for test", then you can test the module by sending command via Serial port tools on PC.



- Serial port tool setting

- Baud rate: 115200
- Data: 8 bit
- Stop: 1 bit
- Parity: None
- Flow Control: None
- Receive: CR+LF
- Transmit: CR
- Echo on



Test command format

- There are 7 AT commands supported in Test FW 00000008.

- ATU : Get CPU ID
- ATV : Get FW Version.
- ATT[Freq, Pout, Psel] : Activate the Transmission tests
 - Freq. can be 8,A,B...O.

Freq	8	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Frequency (MHz)	868	860	865	870	875	880	885	890	895	900	905	910	915	920	925	930

- Pout can be 0, 1, 2, 3, 4

Pout=0 is 7 dBm

Pout=1 is 10 dBm

Pout=2 is 14 dBm

Pout=3 is 17 dBm

Pout=4 is 20 dBm

- Psel can be 0 or 1

0 means on RFO; 1 means on PA_boost.

Example: ATT801 will start the transmission test at 868MHz, with 7dBm using PA_BOOST.

- ATG[Port, Pin] : Activate the GPIO tests

Example: ATGA8 will set GPIO PA8 to 1, ATGB15 will set GPIO PB15 to 1

*ATGB13 will set GPIO PB13 with a positive pulse of 1.5ms width

- ATR[Freq, LNA, BR&FDA] : Activate the Reception tests(FSK modem)

- Freq. can be 8,A,B...O.

Freq	8	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Frequency (MHz)	868	860	865	870	875	880	885	890	895	900	905	910	915	920	925	930

Test command format

- LNA can be 0 or 1
0 means on LNA OFF; 1 means on LNA ON.
- BR&FDA can be 0,1,2.
0 means BR:4800 bps, FDA:5kHz;
1 means BR:38400 bps, FDA:40kHz;
2 means BR:1200 bps, FDA:5kHz.

Example: ATR811 will start the reception test at 868MHz with LNA ON. Received FSK signal BR should be 38400 bps and FDA is 40KHz.

- ATZ[Freq, LNA, BW, SF, CR] : Activate the Reception tests with demodulating LoRa packets
 - Freq. can be 8,A,B...O.

Freq	8	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Frequency (MHz)	868	860	865	870	875	880	885	890	895	900	905	910	915	920	925	930

- LNA can be 0 or 1
0 means on LNA OFF; 1 means on LNA ON.
- BW can be 0,1,2.
0 means 125KHz; 1 means 250KHz; 2 means 500KHz.
- SF can be 6,7,8,9 A,B,C.
- CR can be 1,2,3,4.

CR	1	2	3	4
Cyclic Coding Rate	4/5	4/6	4/7	4/8

Example: ATZ81061 will start the reception test at 868MHz with LNA ON. Received LoRa signal BW should be 125KHz, SF is 6 and CR is 4/5.

- ATS : Stop the current running test. It should be issued before starting a new test item.

FW upgrade with ST-LINK/V2

- Here we'd like to introduce How to program our LoRa module EVK with ST-LINK/V2 device.

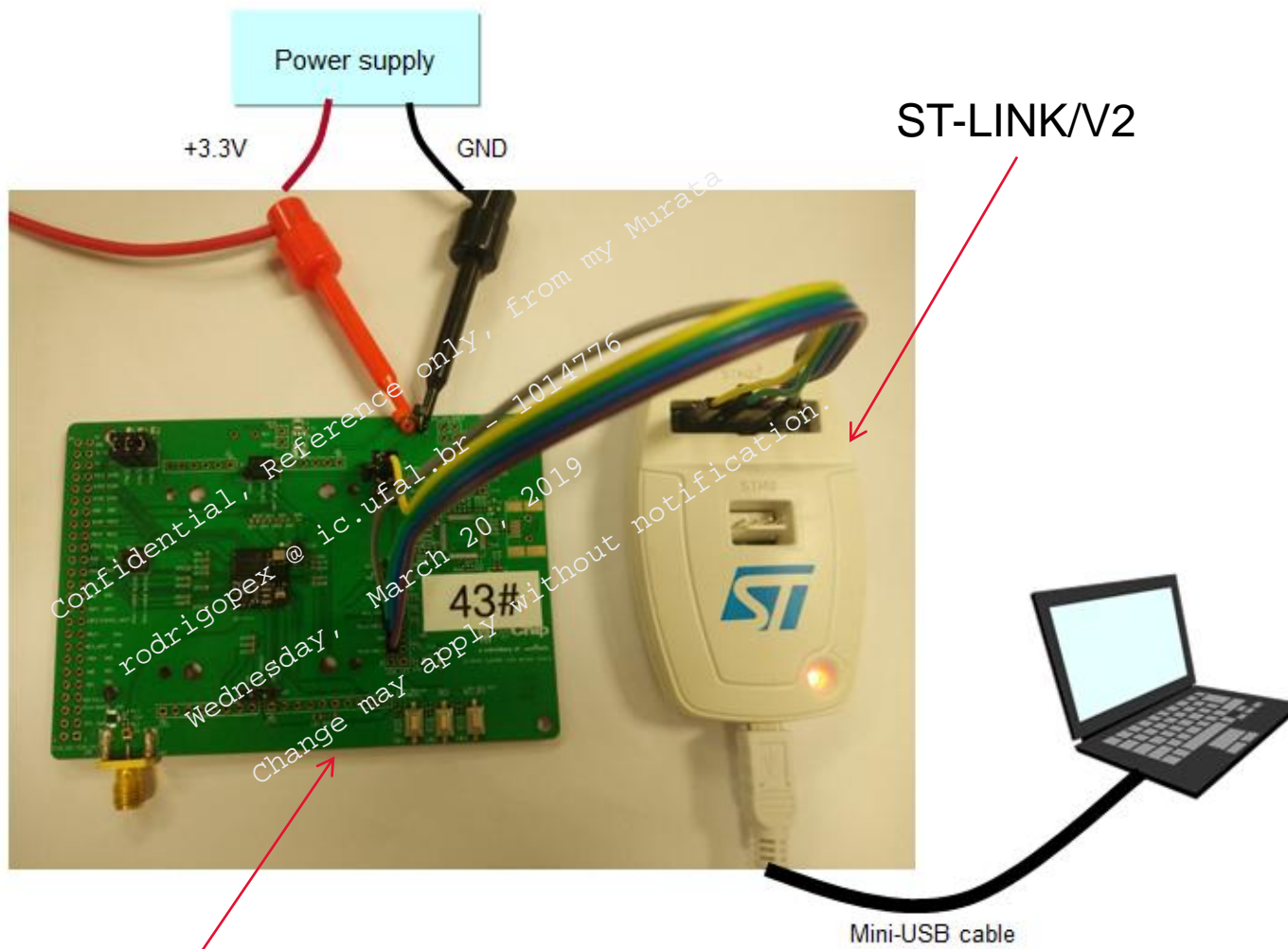


Murata LoRa module EVK



ST-LINK/V2

How to connect



Murata LoRa module EVK

How to Program

Step1: Connection

A) Pull out the J11 jumper to make “open”.

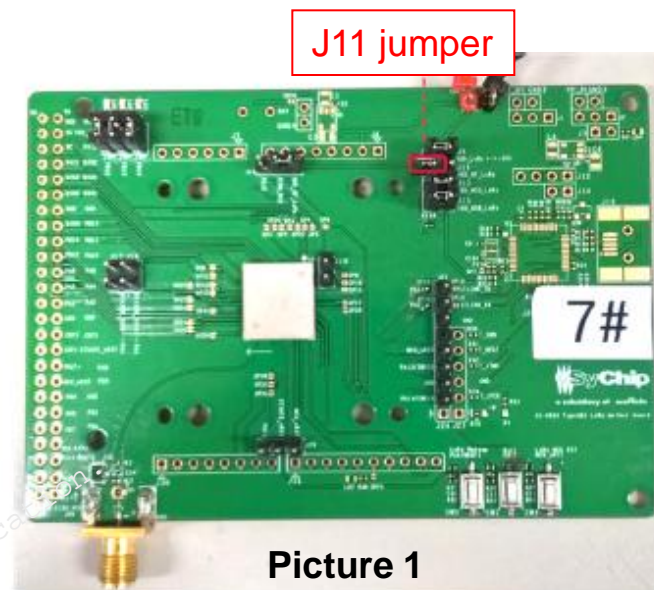
J11 pin sequence in picture1.

B) Use DuPont line to connect LoRa EVK to ST-LINK/V2 like picture2.

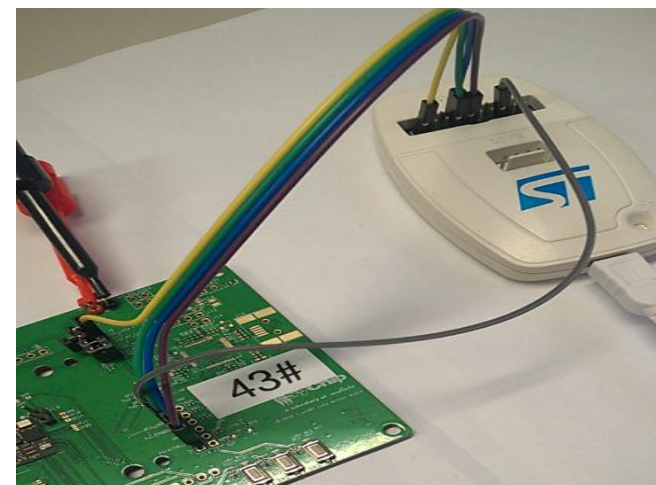
ST-LINK/V2	Mother board	Remark
Pin1:MCU VDD	↔ J11 pin1	Yellow line
Pin7:SWDIO	↔ J26 pin4:PA13/SWDIO	Green line
Pin8:GND	↔ J26 pin3:GND	Blue line
Pin9:SWCLK	↔ J26 pin2:PA14/SWCLK	Violet line
Pin15:NRST	↔ J26 pin5:MCU_nRST	Grey line

Table 3. JTAG/SWD cable connections

Pin no.	ST-LINK/V2 connector (CN3)	ST-LINK/V2 function	Target connection (JTAG)	Target connection (SWD)
1	VAPP	Target VCC	MCU VDD ⁽¹⁾	MCU VDD ⁽¹⁾
2	TRST	JTAG TRST	JNTRST	GND ⁽³⁾
3	TRST	JTAG TRST	JNTRST	GND ⁽³⁾
4	GND	GND	GND ⁽³⁾	GND ⁽³⁾
5	TDI	JTAG TDO	JTDI	GND ⁽²⁾
6	GND	GND	GND ⁽³⁾	GND ⁽³⁾
7	TMS_SWDIO	JTAG TMS, SW IO	JTMS	SWDIO
8	GND	GND	GND ⁽³⁾	GND ⁽³⁾
9	TCK_SWCLK	JTAG TCK, SW CLK	JTCK	SWCLK
10	GND	GND	GND ⁽³⁾	GND ⁽³⁾
11	NC	Not connected	Not connected	Not connected
12	GND	GND	GND ⁽³⁾	GND ⁽³⁾
13	TDO_SWO	JTAG TDI, SWO	JTDO	TRACESWO ⁽⁴⁾
14	GND	GND	GND ⁽³⁾	GND ⁽³⁾
15	NRST	NRST	NRST	NRST
16	GND	GND	GND ⁽³⁾	GND ⁽³⁾
17	NC	Not connected	Not connected	Not connected
18	GND	GND	GND ⁽³⁾	GND ⁽³⁾
19	VDD	VDD (3.3V)	Not connected	Not connected
20	GND	GND	GND ⁽³⁾	GND ⁽³⁾



Picture 1



Picture 2

How to Program

Step1: Connections

- A) Pull out the J11 jumper to make “open”. J11 pin sequence in picture1.
- B) Use DuPont line to connect LoRa EVK to ST-LINK/V2 like picture2.
- C) Supply +3.3V to LoRa EVK. Connect ST-LINK/V2 to PC via mini-USB cable.

Step2: Program

- A) Launch “STM32ST-LINK Utility” on PC
- B) Use “Target->Connect” and “Target->Program& Verify...” to download image.

**Please refer to “UM0892” on ST Micro website for more details.*

Step3:

- A) Remove the DuPont line and pull back J1 jumper.

